B. Karyogamy: the union of cells (gametes), cytoplast to cytoplast and nucleus to nucleus, to form a 1-nucleate cell, the zygote. The following variations occur:—

1. Isogamy. The union of gametes undistinguishable in size, form, and behaviour; this may vary as follows:—
    - (*a*) Multiple: between several gametes (up to 6).
    - (*b*) Binary: between a pair of gametes;

    or, from another point of view—
    - (*c*) Indifferent: between any gametes of the species.
    - (*d*) Exogamous: between gametes of distinct broods only.
    - (*e*) Endogamous: between gametes of the same brood only.
2. Anisogamy: the union of two gametes differing chiefly in size; the smaller (*micro*-) gamete is *male*, the larger (*mega*-) gamete, *female*.
3. Hyperanisogamy: the female gamete, at first active, comes to rest before fusion with the male.
4. Oogamy: the female is never actively motile; the male is termed a *spermatozöon*, the female an *oosphere*.

From another point of view karyogamy is—

5. Zooidiogamous: one gamete at least is actively motile (flagellate, ciliate, or amœboid).
6. Siphonogamous: karyogamy is effected by a tubular outgrowth from one or both of the gametes.

II. In apocytial fungi multinucleated masses of protoplasm (*gametoids*) may conjugate to form a *zygotoid*, by a siphonogamous process. The union may be *isogamous* or *anisogamous*.

III. Gametes may be classified as follows:—

A. According to their *formation*—

1. Euschist: formed by repeated complete divisions from a parent cell, the gametogonium.
    - (*a*) Euthyschist: each nuclear division is accompanied by cell division.
    - (*b*) Bradyschist: the nuclear divisions are completed before any cell division takes place.
    - (*c*) Isoschist: the brood-cells of a gametogonium are all equal and functional.
    - (*d*) Anisoschist: the brood-cells are unequal, some of them being reduced to aborted or degraded gametes.
2. Hemischist: the divisions are limited to the nucleus, none occurring in the cytoplasm.
3. Aposchist: the cell divisions do not occur, but a cell directly assumes the behaviour of a gamete.
4. Symphytic: the gameto-nucleus is formed by the fusion of several nuclei.

B. According to their *behaviour*, as—

1. Facultative: retaining the power of development if karyogamy fails to occur.
2. Obligatory: with no power of independent development.

IV. Paragenesis will include the following modes, usually grouped under the term parthenogenesis, apogamy (*pro parte*), &c.:—

A. True Parthenogenesis: the direct development of a facultative gamete without karyogamy. This may occur in the case of—

(1) Isogametes; (2) Anisogametes (male and female); (3) Oogametes.

B. Simulated Parthenogenesis:—

1. Cellular: a cell assumes directly the behaviour of a zygote.
2. Apocytial: a multinucleate mass of protoplasm assumes directly the behaviour of a zygotoid.

C. Metagametal Rejuvenescence:—

1. Unicellular: a single cell in the neighbourhood of the gamete assumes the form and behaviour of the zygote.
2. Multicellular: a mass of cells in the position where gametes should be produced, assumes the character of the young organism formed by the zygote.

D. Paragamy or Endokaryogamy: vegetative or gametal nuclei lying in a continuous mass of cytoplasm fuse to form a zygote nucleus.

1. Progamic paragamy: the fusing nuclei are the normal gametonuclei of the progamous cell (ovum which has formed 1-polar body).
2. Apocytial paragamy: the vegetative nuclei of an apocytium fuse to form a zygote nucleus.

The President of the Section read a paper by himself and Miss Dorothea Pertz, on the artificial production of rhythm in plants. The apparatus, devised by the Cambridge Scientific Instrument Company, was exhibited. The plant is subjected to a series of alternate and opposite influences from light or gravitation, as the case may be. The plant to be experimented with is fixed to a spindle, which, by a clockwork escapement, makes a sudden semi-revolution every half-hour. When the clockwork is stopped, the plant continues to curve with an acquired rhythm, as if the machinery were still in action. This is similar to certain natural rhythms—for instance, to the "sleep" of flowers, which for a short time continue to open and shut although kept constantly in the dark.

Prof. Green read a paper on the occurrence of diastase in pollen. The starch in the pollen grain serves as nutriment for the growing pollen tube, and the presence of the ferment converting it into sugar enables it to travel along the growing tube.

Prof. Vines, in a paper upon diastase in foliage leaves, controverts the opinion of Prof. Wortmann, who stated that diastase was either absent from the foliage leaves of plants, or present in such minute quantities that it could be of no physiological importance. It is this diastase, and not the protoplasm of the cells, which converts the starch accumulated in the leaves into sugar.

Canon Tristram exhibited and made remarks upon the smallest known species of parrot, of which the skin measured only two inches in length.

THE CONGRESS OF HYGIENE.

WE printed on August 20 (p. 303) an account of some of the work done in the Section of Preventive Medicine in the Congress of Hygiene. The following is the conclusion of our report:—

ALCOHOLISM.

Sir Dyce Duckworth, of London, opened a discussion on "The Relation of Alcoholism to Public Health and the methods to be adopted for its Prevention."

Prof. Harald Westergaard, of Copenhagen, followed with a paper on the same subject. What are the losses of life, he asked, caused to a population by intemperance? This question can to a certain extent be answered by examining the causes of death, especially delirium tremens and chronic alcoholism. It has been objected that these causes of death supply an unsatisfactory picture of drinking excess, because the wish to spare the feelings of surviving relatives makes returns of such deaths less trustworthy, and it has therefore been proposed to use other diseases as a measure—such as liver disease (especially cirrhosis of the liver). Yet it is worth while to examine the above-mentioned causes of death. In most countries the statistics of the cause of death do not allow conclusions with regard to alcoholism corresponding to those for Denmark and Norway. But, at all events, the statistical data sufficiently show that a great part of the civilized world is suffering greatly from the effects of alcoholism. The investigations of the Harveian Society make it probable that in London one-seventh of all adult deaths (males and females) is directly or indirectly due to the consequences of alcoholic excess. The mortality in England from alcoholism in 1871–80 among males 25 to 65 years old was about 1 per cent. of all deaths—nearly 800 yearly. What an amount of disease and poverty, of moral and physical degradation, is represented by these 800 deaths! In Belgium the yearly loss of life from delirium tremens among males was 330 in 1870–89. Still greater have been the devastations of drinking in Switzerland. Prussia has a yearly loss of 1100 males from delirium tremens. Undoubtedly we should find, if trustworthy data could be had, that chronic alcoholism and delirium tremens alone kill many thousands of men every year. What is to be done? High excises are generally looked upon as an excellent weapon against alcoholism. But we must not forget that even a very high excise, as in England, does not prevent spirituous liquors from coming within the reach of anybody, so long as the number of public-houses is so exceedingly large as in this country. If a person has to go a long way to get drunk, and if he has in addition to pay a good sum for it, he will stop to think before going. Still, high excises seem to have some effect; the German law of 1887 has, for instance, reduced the consumption of spirits to a certain extent. But generally the reduction of the consumed quantity does not seem to correspond with the increase of the excise. An interesting expedient is the new State monopoly in Switzerland. Ten per cent. of the surplus are left to the cantons for counteracting alcoholism. By regulating the price the monopoly acts like an excise, and the Government takes care that only unadulterated liquors are sold. The monopoly is reported to have had a good sanitary effect, and it has caused some decrease in the consumption of liquors. In connection with excise and duties every effort is to be commended which tends to render the access to intoxicating liquors more difficult. Among these measures, the three popular American systems deserve our attention—viz. the Maine laws, local option, and the high-licence system. The first of these expedients—the prohibitory system—has been tried in Maine and some other American States. According to this system, it is prohibited to manufacture and sell intoxicating liquors, the only exception commonly being that liquors of "foreign production" may be imported and sold in the original packages. But this exception is unjust, permitting the man who can afford it to order as much liquor as he likes, and nearly all reports agree in testifying to the perpetual violation of these laws. One curious fact from Maine, where the system was adopted in 1881 may be mentioned. During the years 1867–86, 8412 divorces of marriages took place, being probably several per cent. of the yearly number of celebrated marriages. Of these no less than 960, or 11 per cent., were caused by intemperance, combined or not with other causes. It thus seems that intemperate habits are rather frequent in this State. Curiously enough, the State of Massachusetts (where there is a considerable revenue for licences) shows, under nearly the same regulations concerning divorces as in Maine, the same proportion—viz. 1054 out of 9853. It seems impossible to suppress the liquor traffic in the larger towns. Between the Maine laws and the high-licence system is an intermediate system—local option. According to this, it is left to the citizens of a village, town, city, or a larger district, to vote for local prohibition. This system seems to work somewhat better than the Maine laws, and it may prove useful in rural districts, the control in small communities being more easily carried through; but in larger towns it is probably ineffective, tempting as it does to a surreptitious liquor traffic. The third system—high licences—has been introduced in several States. Under this system licences for the sale of liquors can be taken out, but the fees are so considerable (for instance, 500 or 1000 dollars yearly) that many small saloons disappear. In some cases the sale of liquors through grocery stores is entirely stopped (Illinois). This system is reported to work well by reducing the number of drinking saloons, thus lessening the opportunity for drinking. It is maintained that "the high-licence system has thrown the liquor traffic into the hands of a more respectable class of dealers," and that those who pay high licences "help the authorities in the conviction of breakers of the law, under the fundamental principle of self-preservation." It is also to be recommended to limit the numbers of licences that may be taken out. This is the case with the Dutch law of 1881. Still more effective have been the efforts in Sweden, Norway, and Finland. The numbers of bars have been gradually greatly reduced, especially in the rural districts; and in most of the towns the so-called "Gothenburg system" has been introduced. According to this system, adopted since 1865 in Gothenburg, all or most of the licences in a town are given to a company which is not allowed to pay more than a fixed rate of interest to the shareholders, the surplus being spent for the benefit of charitable institutions or forming part of the municipal income. The result has been a great reduction of the number of bars. In Gothenburg the company in 1865 took out 40 licenses, but at once reduced the number of saloons to 23. The persons who manage the saloons get a fixed salary for the sale of spirits, and are therefore not tempted to encourage the customers to drinking. Moreover, there is a limitation of the hours during which the saloons are open, and other steps have been taken to prevent abuses. Undoubtedly this system—in connection with the great diminution of the number of bars in the rural districts of the country—has contributed very much to the conspicuous reduction of the alcoholism in the three countries before-mentioned. A very practical expedient is also the prohibition of sale of intoxicating liquors at groceries and similar shops, and this provision ought never to be omitted where steps are taken to limit the number of saloons. And last, not least, it is highly desirable to regulate the opening hours of the saloons.

Dr. Isambard Owen, of London, said he took part in the discussion solely to correct the numerous misquotations current of the "Collective Investigation Report on Intemperance of the British Medical Association," of which Report he was the author. A certain table of figures contained in the Report had been quoted apart from the context in such a manner as to lead the public to believe that, in the view of the author of the Report, the longevity of abstainers fell below that, not only of moderate drinkers, but even of the decidedly intemperate. The conclusions of the Report, as far as concerned the general health of the public, were the following:—(1) That habitual indulgence in alcoholic liquors, beyond the most moderate amounts, has a distinct tendency to shorten life, the average shortening being roughly proportional to the degree of indulgence. (2) That of men who have passed the age of 25, the strictly temperate live, on the average, at least ten years longer than those who become decidedly intemperate. (3) That in the production of cirrhosis and gout, alcoholic excess plays the very marked part which it has long been recognized as playing, and that there are no other diseases anything like so distinctly traceable to the effects of alcoholic liquors. (4) That, cirrhosis and gout apart, the effect of alcoholic liquors is rather to predispose the body towards the attacks of disease generally than to induce any special pathological lesion.

M. Milliet, of Berne, Dr. Norman Kerr, of London, Mr. J. Phillips, of London, Sir V. Barrington, L.C.C., Dr. Robinson, of Maine, U.S.A., Sir Joseph Fayrer, Prof. E. Alglave, of Paris, Dr. Kinkead, of Galway, Dr. Arthur, of London, Prof. Böhmert, of Dresden, and Dr. Sonsino, of Pisa, also took part in the discussion.

On Thursday afternoon, Dr. W. O. Priestley read a paper "On the Improved Hygienic Condition of Maternity Hospitals," of which the following is an abstract:—

During the end of the last century and the first half of the present one, the mortality in maternity hospitals was very large, both on the Continent and in Great Britain. According to Le Fort, it was at the rate of 34 per 1000, while, according to Miss Nightingale, it was only 4·7 per 1000 when patients were confined at their own homes; or, according to Dr. Matthews Duncan, 8 per 1000, equal to 1 in 125. The cause of the increased mortality in lying-in hospitals was the prevalence in these institutions of puerperal fever, 75 per cent. being due to this cause. The infectiousness of puerperal fever, long doubted, was at length established, and also the fact that various poisons, brought from the dissecting room—from patients suffering from erysipelas, eruptive fevers, and the like—became the germs of infection which might cost the lives of many patients. The researches of Pasteur, Koch, Lister, and others have shown that these poisons owed their virulence to the presence of microscopic germs which multiply in the body of patients and produce the deleterious results. Hence it came to be recognized that, by preventing the ingress of these germs to the bodies of puerperal patients, comparative safety, even in lying-in hospitals, was attainable; and the introduction of the antiseptic and aseptic methods has produced not only a remarkable diminution of mortality, but also of the morbidity or illness incident to the puerperal state. A short sketch was given of the modern methods adopted in several countries to insure the greater safety of patients in maternity hospitals, and of the results obtained in Europe and in the United States. The results were very striking, and were attributable mainly to the introduction of the antiseptic or aseptic modes of treatment, although other improvements are not lost sight of. In concluding he called attention to an interesting table in which were thrown together the statistics of maternal deaths in six lying-in hospitals, situated in various countries, since the introduction of aseptic or antiseptic methods. With these he had contrasted the figures of M. Le Fort before the era of antiseptics, and Mr. Newbatt, the distinguished President of the Statistical Society, had kindly computed for him the difference in the proportion of deaths in the two cases :—

Mortality in Maternity Hospitals from all Causes in various Countries of Europe (Le Fort).

BEFORE THE INTRODUCTION OF ANTISEPTICS.

	Deliveries.	Deaths.	Per 1000.
Total	888,312 ...	30,394 ...	34·21

AFTER THE INTRODUCTION OF ANTISEPTICS.

	Date.	Deliveries.	Deaths.	Deaths which would have occurred on basis of Le Fort's figures.
Vienna	1881–5 ...	15,070 ...	106 ...	516
Dresden	1883–7 ...	5,508 ...	57 ...	188
Russia	1886–9 ...	76,646 ...	290 ...	2,622
New York ...	1884–6 ...	1,919 ...	15 ...	66
Boston	1883–6 ...	1,233 ..	27 ...	42
General Lying-in Hospital, London	1886–9 ...	2,585 ...	16 ...	88
Total ...	—	102,961	511[1]	3,522

Number of lives saved out of the 102,961 since the introduction of antiseptics—

Expected deaths on Le Fort's basis	3522
Actual deaths	511
Saving	3011

Dr. Priestley said it would be seen that while, according to M. Le Fort, the maternal deaths in European lying-in hospitals were 34·21 per 1000 under the old *régime*, the mortality is now reduced to somewhat less than 5 per 1000. This computation, put in another way, indicates that if the former rate of mortality had been maintained 3522 maternal deaths might have been expected; the actual deaths were only 511. In other words, 3011 lives of mothers were saved as the result of new and purely scientific methods of treatment. This, he thought, might fairly be stated to be one of the most striking triumphs of preventive medicine. It was no mean achievement to rescue from death more than 3000 lives of women in the acme of their maturity, and when their lives were most valuable to their families.

Dr. Graily Hewitt, of London, Mr. F. Fowke, of London, and Dr. Leduc, of Nantes, spoke on the subject.

A paper was read by Dr. J. C. van Dooremal, of The Hague, on "La Prévention de la Cécité professionnelle."

Dr. Sisley, of London, read a paper on "The Prevention of the Spread of Epidemic Influenza."

Mr. Weaver and Dr. Felkin took part in the discussion.

Greene Pasha, of Cairo, read a paper on "The Influence of the Nile on Mortality in Egypt."

Dr. Felkin, of Edinburgh, read a paper entitled "Observations on Malaria and Enteric Fever in Central Africa, and on the possible Antagonism between Malaria and Phthisis."

Inspector-General Lawson and Mr. Weaver spoke on this subject.

Dr. Lewis Sambon, delegate of the Municipality of Naples, read a paper on "Measures adopted for the Prevention of Infectious Diseases and their Relation to our Knowledge of Epidemics." He first pointed out the similarity, which is most striking, between the mode of development and diffusion of infectious diseases and some insect pests, such as locusts for instance. Both have likewise their endemic areas, both their seasons of development, both in some years spread more widely, and at long intervals give rise to regular plagues; both migrate in the same constant direction, and both die away out of their endemic areas, subsiding in the struggle for life. He said that the diffusion of species by currents and winds will make us understand the peculiarities in the spread of infectious diseases, which had given rise, in all time, to the most strange theories. The influence of atmosphere has been very little studied in connection with infectious diseases, and by this he did not mean the registration of the prevailing lower winds during an epidemic, but serious bacteriological researches in the sinking sediment of the atmosphere and in meteoric waters. Instances of animals being carried by regular winds or wind-storms far beyond the limits of their homes are universally known. Insects of all kinds are often caught hundreds of miles from the nearest land, out on the high seas; North American birds not unfrequently are carried across the Atlantic to Scotland. Far more important is the influence of winds and currents in the distribution of microscopic animals. These minute organisms or their germs, generally adhering to other larger elements of dust, are raised and carried by the wind until they are allowed to sink again to the soil when the air is in stillness. About quarantine Dr. Sambon said that not only our modern investigations proved them useless, but that a long experience has utterly condemned them. England has been accused of being commercially and politically interested in the abolition of quarantine, and this preconception has unfortunately prevented many from valuing the most scientific and liberal ideas which have promoted their opposition to quarantine. No nation can boast of having held public health so high above commercial interest; and we must also remember that the English, at one time, have been the most sanguine supporters of quarantine. Quarantine was first instituted by the old republic of Venice, whose life and power lay entirely in commerce; and Dr. Sambon said that, although it had proved so disastrous to finance, so useless to sanitation, and so vexatious to liberty, he was proud that they were a glory of his country. Dr. Sambon concluded that the most important and perhaps the only satisfactory means against infectious diseases was the sanitation of towns and the hygiene of men. In speaking of the sanitation of towns he said how vast areas of the old city of Naples had been recently pulled down and new districts had been built. A large and splendid supply of water has been introduced since 1887, and when the drainage is completed, Naples will be one of the healthiest towns of Europe. He spoke of the poor classes of all our large towns, and said how they were the culture grounds of epidemics, and finished by saying that it is not enough to improve the sanitary conditions of a town, but that the principles of hygiene should be impressed on the minds and consciences of people, because there could be no public hygiene where private hygiene was not understood.

Deputy-Surgeon-General Bostock, C.B., and Sir Vincent Barrington, delegates of the Metropolitan Asylums Board, read a joint paper on "The Hospital and Ambulance Organization of the Metropolitan Asylums Board for the Removal and Isolation of Infectious Diseases." The paper was illustrated by plans, diagrams, and models.

Surgeon-General Bostock said that the present accommodation for fever and diphtheria consists of six hospitals :—

Name.	Position.	Acreage.	No. of beds.	Population served.
1. Eastern	Homerton	9 ...	442 ...	1,114,432
2. South-Eastern ...	Deptford	11 ...	462 ...	941,381
3. South-Western ...	Stockwell	8 ...	340 ...	582,591
4. Western	Fulham	6 ...	224 ...	690,138
5. North-Western ...	Hampstead ...	11 ...	435 ...	882,514
6. Northern	Winchmore Hill ...	36 ...	480 ...	—
			2383	4.211,056

The first five are in London. The Northern is for convalescents, and is four miles outside the northern boundary of the district. The position of these hospitals is shown on the map. The average length of the journey a patient has to be carried to reach the hospital nearest to his home is three and a half miles. During 1886–87 the number of beds in the eastern and western districts was found to be insufficient, and steps are now being taken to establish an additional hospital in the North-East of London, and to increase the number of beds in the Western Hospital to 400. These additions will give a total number of beds for fever and diphtheria of 2959, or one bed for every 1423 inhabitants. The total number of cases of fever and diphtheria admitted into the managers' hospitals from 1870 to the end of 1890 was 55,204. The accommodation for small-pox is the Floating Hospital at Long Reach, fifteen miles below London Bridge. It contains 350 beds for acute and severe cases on board the *Atlas* and the *Castalia*, the *Endymion* being used for administrative purposes, and 800 in the convalescent hospital at Gore Farm, four miles distant from the ships, giving a total of 1150 beds. The number of small-pox cases admitted into hospital since 1870 to 1890 is 56,979. To this number must be added 1028 cases other than small-pox, making a total of 58,007 admissions. The river service is exclusively used for small-pox cases, and consists of three wharves on the Thames in London for the embarkation of patients. The wharves, as shown on the map, are the "West" at Fulham, the "North" at Poplar, and the "South" at Rotherhithe. In each there is a floating pier in deep water, approached by a bridge, and a shed into which the ambulance carriage drives, with an examination room. As an example of the work, it may be stated that during the small-pox epidemic of 1884–85, 11,060 cases were removed from their homes to the Floating Hospital, 175 doubtful cases were sent from the wharves to the land hospitals, 38 cases were detained in London on account of fog, and 35 persons, not having small-pox at all, were vaccinated and taken home. The greatest number of patients taken down to the Floating Hospital in one day was 104, by the *Red Cross*, in three trips. At the close of the epidemic the Ambulance Committee were able to report the satisfaction they felt that so large a number of persons of both sexes and all ages, most of them in physical suffering, and many helpless from disease, had been carried in all weathers, throughout all seasons of the year, and to a great extent during the hours of darkness, without discomfort or detriment to the patients, and without mishap to any person whatever.

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[1] 4·363 per 1000.

Sir Vincent Barrington, after urging the importance of preserving statistics of work done from an economical, as well as a sanitary point of view, presented statistical papers of fever and small-pox cases treated in Board hospitals. He commented upon the supposed prevalence of disease in 1887, and urged every publicity to be given to Board work, to get over the old prejudices of the working classes against sending patients to the isolated hospitals. He showed a chart demonstrating that the increased use by the public of the Board hospitals and the transport from 1879 to 1890, had been followed by steadily decreasing fever mortality in London. Now over half the cases of scarlet fever in all London are probably treated in Board hospitals. He referred to the improved sanitation of dwellings and the decreasing severity of the type of the disease as factors in the decreased mortality observed. He presented small-pox pedigrees in non-epidemic times, showwing in one case that 19 persons, in another 10 persons, were infected from a single case. Also that 20 cases of the 53 treated this year had been barren of infecting others as they were so rapidly removed to floating isolated hospitals. The deduction drawn was that the rapid system of removal of recent years by the combined land and river service of the Board had a sensible effect in checking a possible epidemic. He presented the forms for recording the evidence of the existence of vaccination cicatrices on the improved system adopted after conferences with Board medical officers and the Local Government Board, and advocated other sanitary bodies adopting the same system, thus facilitating the compilation of statistics, invaluable for the advance of science, and therefore for the treatment and check of small-pox, and the consideration of protection by vaccination.

Dr. Seaton, of London, Dr. Armstrong, of Newcastle, Dr. Dudfield, of London, Prof. Stokvis, of Amsterdam, and Dr. Hauser, of Madrid, also spoke on this subject.

Surgeon-General Beatson, M.D., of Eastbourne, read a paper on "Prevention of Disease in Growing Towns."

Prof. Stokvis and Dr. Dickson spoke on the subject.

Dr. Pistor, of Berlin, read a paper entitled "Ueber die Desinfection," of which the following is an abstract. Dr. Pistor dealt with the general rules and methods to be observed in the disinfection of infectious diseases. Such rules should be short, clear, and capable of being understood by everyone. Incineration and boiling for half an hour are, of course, very effectual disinfectants, but they are not always applicable. A 1 to 2 per cent. solution of caustic soda is a very useful disinfectant. Other methods are steaming, mechanical cleansing (such as rubbing, brushing, &c.), carbolic acid solution (2 to 5 per cent.), lime-water containing about 20 per cent. of caustic lime, and a 1 to 2 per cent. solution of calcined carbonate of soda. These methods and solutions are effective against all the poisons of infectious diseases. The head of the house or institution ought to be responsible for the disinfection under the direction of the doctor, and a record ought to be preserved of the mode of disinfection used.

Sir William Moore, K.C.I.E., Q.H.P., read a paper on "The Prevention of Fevers in India."

A discussion followed, in which Surgeon-General Cook of Bombay, the President, Surgeon-General Beatson, Dr. Leduc of Nantes, Dr. Payne of London, Surgeon-Major Poole of London, and Dr. W. Dickson, R.N., took part.

Dr. Prospero Sonsino, of Pisa, read a paper on "The Principal and most Efficacious Means of preventing the Spread of Entozoal Affections in Man."

Dr. Sandwith, of Cairo, and the President, made a few remarks.

Dr. F. M. Sandwith, of Cairo, read a paper on "Cholera in Egypt."

Dr. Stekoulis, of Constantinople, and Dr. Simpson, of Calcutta, took part in the discussion.

Dr. Curgenven, of Teddington, read a paper on "The Disinfection of Scarlet Fever and other Infective Disorders by Antiseptic Inunction."

Dr. W. Gemmell, of Glasgow, spoke.

Dr. Phineas S. Abraham, of London, read a paper entitled "On the Alleged Connection of Vaccination with Leprosy."

Mr. Milnes, of London, Dr. Cassidy, of Toronto, and Surgeon-Major Pringle spoke on this subject.

Dr. J. P. Williams Freeman, of Andover, read a paper entitled "Importance of more actively enforcing Ventilation: suggesting a Standard of Air Impurity as a Basis of Prosecutions." Dr. Freeman said that ventilation is of well-recognized importance; the causation of phthisis is a good example of it. Foul air is a cause of tuberculosis in three ways: *directly*, by supplying the bacillus to the lungs, and through the saliva to the intestinal canal; *indirectly*, by causing tuberculosis in cattle, and by so reducing the human body's vitality as to render it a suitable nidus. The bacteriologist leads us to expect that fresh air will be hostile to the virus; the demographist shows that the death-rate from phthisis increases from islands, coast districts, agricultural districts, small towns, to large towns; also in occupations, according to their exposure to the open air, from farmers and fishermen up to drapers and printers (see Dr. Ogle's table). The loss of health from want of ventilation is so familiar as to be little thought of, but the deaths from phthisis alone, fully preventable, must be enormous. The Public Health and Factories Acts provide for proper ventilation of buildings. Any standard that public opinion, lay and medical, may demand might be enforced. Beyond seeing to the cubic space in common lodging-houses, practically nothing is done, and the air of buildings is often "dangerous and injurious to health." An inspector should frequently "sample" the air of buildings, and if it exceed a certain limit of impurity the owner should be prosecuted, cubic space and means of ventilation being left for the architect; the limit to be when the air inside a building contains twice as much carbonic acid gas as the air outside at the same time. This would usually correspond to De Chaumont's "Rather close, organic matter becoming perceptible." Students of preventive medicine should demand this reform from the administrators of the law. Polluted air is as recognizable, preventable, and harmful as unsound food or bad water, and should be treated on the same lines.

Two other papers were taken as read, one by Dr. S. Lodge, Jun., of Bradford, entitled "On the Occurrence of the Broncho-pulmonary form of Anthrax amongst Rag-pickers in England, and Suggestions for its Prevention," and one by Dr. H. Rident, of Elbœuf-sur-Seine, entitled "Des Troubles du Côté des agents de la Respiration chez les Fileurs, et de leur Conséquences."

After a speech by the President, complimenting the Secretaries on their work, and a vote of thanks to the President, the meetings of the Section terminated.

SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, September 2.—Mr. Frederick DuCane-Godman, F.R.S., President, in the chair.—Mr. G. F. Scott-Elliot exhibited a series of various species of Diptera collected on *Ranunculaceæ*, *Papaveraceæ*, and *Cruciferæ*. He said that during the past summer he had studied about forty species of plants belonging to the orders named, and that they had all been visited by insects which were probably necessary for nectariferous flowers. The majority of the Diptera caught were not confined to one species or even genus, but, in view of the unmodified character of the flower in the orders named, this was only to be expected. Mr. Verrall observed that certain insects affected certain plants, but that the *Geraniaceæ* were seldom visited. The discussion was continued by Mr. McLachlan, Mr. Kirby, and others.—Mr. W. L. Distant exhibited a specimen of the orthopterous insect *Hemisaga hastata*, De Sauss., which, in the Transvaal, he observed to attack and feed on *Danais chrysippus*, a butterfly well known from its protective character and distasteful qualities to have a complete immunity from the usual Lepidopteral enemies. The *Hemisaga* lurked amongst the tops of tall flowering grasses, being consequently disguised by its protective resemblance to the same, and seized the *Danais* as it settled on the bloom. From close watching and observation, Mr. Distant could discover no other danger to the life of this well-known and highly protected butterfly.—Mr. T. R. Billups exhibited four species of Diptera, which he believed to be respectively *Oxycera terminata*, *Pipezella annulata*, *Clidogastra puncticeps*, and *Oxyphora arnicæ*, taken at Oxshott, Surrey, on July 11 last. He mentioned that all of them were recorded in Mr. Verrall's list only as "reputed British." He also exhibited a specimen of *Hypoderma bovis*, Deg., taken at Plumstead on July 29 last.—Dr. D. Sharp, F.R.S., exhibited several species of *Forficulidæ*, and called attention to the diverse conditions of the parts representing the wings in the apterous forms.—Mr. H. Goss exhibited living larvæ of *Scoria dealbata*, reared from ova. They were feeding on *Polygonum aviculare*, but not very freely; *Brachypodium sylvaticum* had been named as a food-plant for this species, but he did not find that the larvæ would eat this or any other grass.—The Rev. Dr. Walker exhibited, and read notes on, a collection of Lepidoptera, Hymenoptera, Coleoptera, Neuroptera, and Diptera, which he had recently made in Norway.

PARIS.

Academy of Sciences, September 7.—M. Duchartre in the chair.—Remarks on the influence that the aberration of light may exercise on spectroscopic observations of solar prominences, by M. Fizeau. Several observers have recently measured remarkably high velocities in solar prominences by the application of the Doppler-Fizeau principle. It is evident that if the matter of which the eruption consists be ejected in the neighbourhood of the ecliptic with a velocity equal to that of the earth in its orbit, the prominence will suffer an apparent displacement of $20''{\cdot}445$, in the same manner that a star is displaced by $20''{\cdot}445$ owing to the motion of the earth combined with the velocity of light. Aberration should therefore be taken into account in determining the positions and heights attained by the phenomena in question.—On the number of roots common to several simultaneous equations, by M. Émile Picard.—On the blending of separate chromatic sensations perceived by each of the two eyes, by M. A. Chauveau. If two colours are simultaneously and separately received on the corresponding points of the two retinas and transmitted respectively to the nervous centres, do they blend together at these centres and give rise to the sensation of the resultant colour? This is the question investigated by the author. And he finds that there is a real blending of the colour perceptions resulting from the independent excitation of each of the two retinas.—On the influence of the products of the culture of *naphyloccque doré* on the vaso-motor nervous system and on the formation of pus, by M. S. Arloing.—Observations of the asteroid discovered by Dr. Palisa on August 30, made at Toulouse Observatory, by M. E. Cosserat. Three observations for position were made on September 1 and one on September 2.—On the distribution in latitude of the solar phenomena observed at the Royal Observatory of the Roman College during the first half of this year, by M. P. Tacchini. Prominences have been most frequent in the southern solar hemisphere, as was also the case in 1889 and 1890, and the maximum of frequency in the zones ± 40°–50°. The spots and faculæ have preserved their preponderance north of the equator, with maxima of frequency in latitudes slightly lower than the prominences. All the phenomena have been rare near the solar equator.—Direct synthesis of primary alcohols, by M. Paul Henry.—On some attempts to reproduce acid rocks, by M. H. Le Chatelier.—On the quantity of starch contained in the tubercles of the radish, by M. P. Lesage.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Livingstone and the Exploration of Central Africa: H. H. Johnston (Philip).—My Water Cure: S. Kneipp, translated (Blackwood).—Monthly Weather Reports of the Meteorological Office, May to December 1887 (Eyre and Spottiswoode).—Hourly Means, 1887 (Eyre and Spottiswoode).—Meteorological Observations at Stations of the Second Order, 1887 (Eyre and Spottiswoode).—Quarterly Weather Report of the Meteorological Office, July to December 1880, and October to December 1880 (Eyre and Spottiswoode).—Cyclone Tracks in the South Indian Ocean (Eyre and Spottiswoode).—Manufacture of Sulphuric Acid and Alkali; vol. i. Sulphuric Acid, 2nd edition: Dr. G. Lunge (Gurney and Jackson).—A Hand-book of the Destructive Insects of Victoria, Part 1: C. French (Melbourne, Brain).—Notes on Elementary Physiography: H. C. Martin (J. Heywood).—Peloponnesische Bergfahrten: Dr. A. Philippson (Wien).—An Account of British Flies, Part 1: M. C. E. Leigh and F. V. Theobald (E. Stock).—Studies from the Kindergarten, vol. iv., No. 1 (Laurie)—Carta delle Strade Ferrate Italiane al 1° Aprile, 1891 (Roma).—Jahrbuch der k. k. geologischen Reichsanstalt. Jahrg. 1890, xl. Band, 3 and 4 Heft (Williams and Norgate).—Himmel und Erde, September (Berlin, Paetel).—L'Anthropologie, 1891, Tome ii., No. 4 (Paris, Masson).—Journal of the Royal Horticultural Society, vol. xiii. Part 2 (117 Victoria Street).

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